

**What is claimed is:**

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1. A population of insulin-producing cells made by a process comprising contacting non-insulin producing cells with a growth factor selected from the group consisting of GLP-1, growth factors having amino acid sequences substantially homologous to GLP-1, and fragments thereof.
  2. The population of claim 1, wherein the non-insulin producing cells are contacted with the growth factor *in vitro*.
  3. The population of claim 1, wherein the non-insulin producing cells are contacted with the growth factor *in vivo*.
  4. The population of claim 1, wherein the non-insulin producing cells comprise non-islet cells.
  5. The population of claim 1, wherein the non-insulin producing cells comprise pancreatic cells.
  6. The population of claim 1, wherein the non-insulin producing cells comprise pancreatic acinar cells.
  7. The population of claim 1, wherein the non-insulin producing cells comprise stem cells.
  8. The population of claim 1, wherein the non-insulin producing cells comprise pancreatic stem cells.

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9. The population of claim 1, wherein the non-insulin producing cells are mammalian cells.
  10. The population of claim 9, wherein the mammalian cells are human cells.
  11. The population of claim 1, wherein the noninsulin-producing cells are contacted with the growth factor for at least twenty-four hours.
  12. A population of insulin-producing cells made by a process comprising contacting noninsulin-producing cells with a growth factor selected from the group consisting of Exendin-4, growth factors having amino acid sequences substantially homologous to Exendin-4, or fragments thereof.
  13. The population of claim 12, wherein the non-insulin producing cells are contacted with the growth factor *in vitro*.
  14. The population of claim 12, wherein the non-insulin producing cells are contacted with the growth factor *in vivo*.
  15. The population of claim 12, wherein the non-insulin producing cells comprise non-islet cells.
  16. The population of claim 12, wherein the non-insulin producing cells comprise pancreatic cells.

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17. The population of claim 12, wherein the non-insulin producing cells comprise pancreatic acinar cells.
  18. The population of claim 12, wherein the non-insulin producing cells comprise stem cells.
  19. The population of claim 12, wherein the non-insulin producing cells comprise pancreatic stem cells.
  20. The population of claim 12, wherein the non-insulin producing cells are mammalian cells.
  21. The population of claim 20, wherein the mammalian cells are human cells.
  22. The population of claim 1, wherein the noninsulin-producing cells are contacted with the growth factor for at least twenty-four hours.
  23. A method of differentiating non-insulin producing cells into insulin producing cells, comprising contacting the non-insulin producing cells with a growth factor selected from the group consisting of GLP-1, growth factors having amino acid sequences substantially homologous to GLP-1, and fragments thereof.
  24. The method of claim 23, wherein the non-insulin producing cells are contacted with the growth factor for at least twenty-four hours.

25. The method of claim 23, wherein the non-insulin producing cells are contacted with the growth factor *in vitro*.
26. The method of claim 23, wherein the non-insulin producing cells are contacted with the growth factor *in vivo*.
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27. A method of differentiating non-insulin producing cells into insulin producing cells, comprising contacting the non-insulin producing cells with a growth factor selected from the group consisting of Exendin-4, growth factors having amino acid sequences substantially homologous to Exendin-4, or fragments thereof.
28. The method of claim 27, wherein the non-insulin producing cells are contacted with the growth factor for at least twenty-four hours.
29. The method of claim 27, wherein the non-insulin producing cells are contacted with the growth factor *in vitro*.
30. The method of claim 27, wherein the non-insulin producing cells are contacted with the growth factor *in vivo*.
31. A method of enriching a population of cells for insulin-producing cells, comprising contacting the population of cells with a growth factor that differentiates noninsulin-producing cells into insulin-producing cells.
32. A method of promoting pancreatic amylase producing cells to produce both insulin and amylase, comprising contacting the pancreatic amylase producing cells with a growth factor selected from the group consisting

of GLP-1, growth factors having amino acid sequences substantially homologous to GLP-1, and fragments thereof.

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33. A method of promoting pancreatic amylase producing cells to produce both insulin and amylase, comprising contacting the pancreatic amylase producing cells with a growth factor selected from the group consisting of Exendin-4, growth factors having amino acid sequences substantially homologous to Exendin-4, and fragments thereof.
  34. A method of treating diabetes in a subject diagnosed with Type 1 diabetes, comprising administering to the subject a growth factor selected from the group consisting of GLP-1, growth factors having amino acid sequences substantially homologous to GLP-1, and fragments thereof by continuous infusion for at least twenty-four hours.
  35. The method of claims 34, wherein the growth factor differentiates non-insulin producing cells into insulin producing cells.
  36. A method of treating diabetes in a subject diagnosed with Type 1 diabetes, comprising administering to the subject a growth factor selected from the group consisting of Exendin-4, growth factors having amino acid sequences substantially homologous to Exendin-4, and fragments thereof.
  37. The method of claim 36, wherein the growth factor is administered by bolus at least once.

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38. The method of claims 36, wherein the growth factor differentiates non-insulin producing cells into insulin producing cells.
  39. A method of treating diabetes in a subject, comprising
    - (a) obtaining non-insulin producing cells from the subject being treated;
    - (b) contacting the non-insulin producing cells with a growth factor, thereby differentiating non-insulin producing cells into insulin-producing cells; and
    - (c) administering the insulin-producing cells from step (b) to the diabetic subject.
  40. The method of claim 39, wherein the non-insulin producing cells are pancreatic cells.
  41. The method of claim 39, wherein the non-insulin producing cells are stem cells.
  42. A method of treating diabetes in a subject, comprising
    - (a) obtaining non-insulin producing cells from the subject being treated;
    - (b) contacting the non-insulin producing cells with a growth factor, thereby differentiating non-insulin producing cells into insulin producing cells;
    - (c) altering the surface antigens of the insulin producing cells of step (b), thereby reducing the likelihood that the insulin producing cells will cause an immune response; and

- (d) administering the cells with altered surface antigens from step (c) to the diabetic subject.
43. The method of claim 42, wherein the non-insulin producing cells are pancreatic cells.
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44. The method of claim 42, wherein the non-insulin producing cells are stem cells.
45. A method of treating diabetes in a subject, comprising
- obtaining non-insulin producing cells from a donor;
  - contacting the non-insulin producing cells with a growth factor, thereby differentiating non-insulin producing cells into insulin producing cells; and
  - administering the insulin producing cells from step (b) to the diabetic subject.
46. The method of claim 45, wherein the donor is a cadaver.
47. The method of claim 45, where the non-insulin producing cells are pancreatic cells.
48. The method of claim 45, wherein the non-insulin producing cells are stem cells.
49. A method of treating diabetes in a subject, comprising

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- (a) obtaining non-insulin producing cells from a donor;
  - (b) contacting the non-insulin producing cells with a growth factor, thereby differentiating non-insulin producing cells into insulin producing cells;
  - (c) altering the surface antigens of the insulin producing cells, thereby reducing the likelihood of that the insulin producing cells will cause an immune response; and
  - (d) administering the cells with altered surface antigens from step (c) to the diabetic subject.

50. The method of claim 49, wherein the donor is a cadaver.
51. The method of claims 49, wherein the non-insulin producing cells are pancreatic cells.
52. The method of claim 49, wherein the non-insulin producing cells are stem cells.